UNIVERSITY OF UTAH
DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
ECE 2280

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# Introduction to Laboratory Procedures

## LAB PARTNERS:

- There will be no lab **partners**.
- You may **SHARE** lab equipment if needed, but not breadboards. You are required to assemble your own circuits and then share the lab equipment.

## NOTEBOOKS:

Many engineers are paid to do research and development (R&D) and invention. The companies that pay them are often interested in obtaining patents on these developments. In patents, timing is important—you have to be first, and you have to be able to prove it. A well-kept engineering notebook can be used in court as part of your proof. The number-one purpose of a true engineering notebook is to keep an accurate, chronological record of your work. Someday, you may need to keep one for your high-paying job. Many non-R&D jobs also require a similar notebook for record keeping or billing purposes.

In this class, you will need to **keep a notebook to receive a grade**. Pretend this is job training. Keeping a true engineering lab notebook, acceptable in court, is fairly involved. Everything must be written in ink, all pages must be numbered, dated, and signed by others, etc. The standards for this class will be lax in comparison. However, the following items are required:

1. Write a **title** and a **date** for each lab section.
   - Clearly differentiate each sub-section or experiment within the lab so that the Lab TA can easily see what you have done.

2. Work in your lab notebook **at lab time**—no scribble sheets for data so that you can "write it down neatly later."
   - At least **once** in each lab you will need to get your instructor to **initial (check-off) your book**. Some or all of your notebook will be graded at this time.

3. **Organize** your notebook so that it is obvious which tables and graphs belong with which circuits.
   - **Write clearly**– the verb here is write, I did not say "*cut and paste clearly"*, I said "*write clearly*."

4. **Do not cut and paste the lab handout** into your notebook. Presumably you learned how to cut-and-paste in the First Grade.

5. Learn how to **record your work** yourself. That does not mean you have to write a dissertation on each lab. Usually, you just have to draw some diagrams, write a few words and make a table of your data.

6. Follow the guidelines on the **Lab Notebook Handout** (on the class website) for procedures, data, and conclusions.

7. Use **drawings, tables, and graphs**. **Label** them well. Often these are easier to create and better to convey information than written text.

8. Write a **conclusion** for each sub-section or experiment within the lab **as you finish it**. Often a single sentence will do.

9. **Main objectives**:
   - Write, draw and record in your notebook as you work in the lab.
   - Make your notebook useful for later reference.

## CHECK-OFF:

When you are finished with a section or experiment in your lab, call your Lab TA over to check you off. You should be able to:

- Demonstrate your working circuit.
- Answer questions about what you did.
- Show your finished notebook (finished through the section that you are checking off).
- Receive part of your lab grade right on the spot.

**Note:** Check-off becomes a problem if you ever miss your normal lab time, so don't. If you do so anyway, see if your Lab TA can meet you sometime in lab or will accept the check-off from one of the other Lab TA's.

## NOTEBOOK GRADING:

Ideally, your Lab TA will grade your notebook as you check off each section. Then, you can just leave when your last item is checked off. (Inform your Lab TA if this is your last check-off for the day.)

Unfortunately, your Lab TA will often fall behind and wave you on when you ask for a check-off. In that case:

- Give your notebook to the Lab TA when you leave.
- Your Lab TA should return your graded notebook to the ECE office within 4 days.
- If you want to take the notebook with you to add more material, you will need to get your Lab TA's approval and signature in your notebook. Arrange a method to hand in the notebook later. You may not get your notebook back until the next lab.